

Vapor Pressure

From the user, an air temperature (T), a dewpoint temperature (T_d) are given.

To convert the saturated vapor pressure and/or the actual vapor pressure, the temperature values must be converted to degrees Celsius ($^{\circ}\text{C}$).

To see how to convert temperatures see the link below:

[Temperature Conversion](#)

Then, saturated vapor pressure (e_s) and the actual vapor pressure (e) can be calculated using the formula listed below:

$$e = 6.11 \times 10^{\left(\frac{7.5 \times T_d}{237.7 + T_d}\right)} \quad e_s = 6.11 \times 10^{\left(\frac{7.5 \times T}{237.7 + T}\right)}$$

For a bonus answer, after calculating both vapor pressures the relative humidity (rh) can be calculated using the equation below:

$$rh = \frac{e}{e_s} \times 100$$

The vapor pressure answers will be in units of millibars (mb) or hectorPascals (hPa).

To convert the vapor pressure to other units, see the link below:

[Pressure Conversion](#)